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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/785,466	02/23/2004	Kyle K. Kirby	M4065.1289/P1289	8567

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EXAMINER	
LIVEDALEN, BRIAN J	

ART UNIT	PAPER NUMBER
2878	

DATE MAILED: 06/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding..

HA

Office Action Summary	Application No.	Applicant(s)	
	10/785,466	KIRBY, KYLE K.	
	Examiner	Art Unit	
	Brian J. Livedalen	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6,8-18,21-31,33-43,46-51,53,55 and 57-59* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,8-18,21-31,33-43,46-51,53,55 and 57-59* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/18/2006 has been entered.

This action is in response to amendment filed 5/18/2006. Claims 1-6, 8-18, 21-31, 33-43, 46-51, 53, 55, and 57-59 are pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 4, 5, 8, 9, 11, 13-18, 24-27, 29, 30, 33, 34, 36, 38-41, 43, 46, 47, 49, 50, 53, 55, and 57-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glenn et al. (6503780) in view of Segawa et al. (2002/0057468).

In regard to claims 1, 26, 40, and 46, Glenn discloses (fig. 14) a microelectronic imaging unit and method containing a microelectronic die (102) have a first side, a second side opposite the first, and a perimeter having end surfaces; an image sensor

(104) on the first side, an integrated circuit (102) in the die and electrically coupled to the image sensor, and a plurality of bond-pads (106) on the first side of the die and electrically coupled to the integrated circuit (column 7, lines 18-35); a single unitary cover unit over the image sensor, the cover unit having a window (110); and the side member (1418) projecting from the window, the side member being attached to the die; and electrically conductive interconnects (1406) coupled to corresponding terminals and extending through the cover unit and/or die; a plurality of bond-pads on the first side of the die and electrically coupled to the integrated circuit; the interconnects electrically coupled to corresponding bond-pads. Glenn further discloses a wafer forming a plurality of microelectronic imaging units (abstract). Glenn is not explicit regarding the window and side member being an integral piece. However, integrating separate parts is of routine skill in the art. *In re Larson*, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965). It would have been obvious to one of ordinary skill in the art at the time the invention was made to integrate the window and side member in order to simplify the manufacturing process. Glenn fails to disclose an optics unit having a substrate and an optic member attached to the cover unit, wherein the optic member has a first side in contact with the substrate and a second side located between the first side and the microelectronic die. However, Segawa discloses (fig. 1) an imager with an optics unit having a substrate (18) and an optic member (5) attached to a cover unit, wherein the optic member has a first side in contact with the substrate and a second side located between the first side and a microelectronic die (7). It would have been obvious to one of ordinary skill in the art at the time the invention was made in to include an optics unit

as set forth in Segawa in order to simply incorporate an optical member to more effectively focus the incoming light, thus increasing the accuracy of the imaging unit. Note, the method of manufacturing is inherent from the structure set forth above because the apparatus is necessarily made from the method steps.

In regard to claims 15 and 57, Glenn discloses (fig. 14) a microelectronic imaging unit and method containing a microelectronic die (102) have a first side, a second side opposite the first, and a perimeter having end surfaces; an image sensor (104) on the first side, an integrated circuit (102) in the die and electrically coupled to the image sensor, and a plurality of bond-pads (106) on the first side of the die and electrically coupled to the integrated circuit (column 7, lines 18-35); a single unitary cover unit over the image sensor, the cover unit having a window (110); and the side member (1418) projecting from the window, the side member being attached to the die; and electrically conductive interconnects (1406) coupled to corresponding terminals and extending through the cover unit and/or die; a plurality of bond-pads on the first side of the die and electrically coupled to the integrated circuit; the interconnects electrically coupled to corresponding bond-pads. Glenn further discloses a wafer forming a plurality of microelectronic imaging units (abstract). Glenn fails to disclose an optics unit having a substrate and an optic member attached to the cover unit, wherein the optic member has a first side in contact with the substrate and a second side located between the first side and the microelectronic die. However, Segawa discloses (fig. 1) an imager with an optics unit having a substrate (18) and an optic member (5) attached to a cover unit, wherein the optic member has a first side in contact with the substrate and a second

side located between the first side and a microelectronic die (7). It would have been obvious to one of ordinary skill in the art at the time the invention was made in to include an optics unit as set forth in Segawa in order to simply incorporate an optical member to more effectively focus the incoming light, thus increasing the accuracy of the imaging unit. Note, the method of manufacturing is inherent from the structure set forth above because the apparatus is necessarily made from the method steps.

In regard to claims 2, 16, 27, 41, 47, and 58, Glenn discloses that the side member is attached to a portion of the perimeter of the die.

In regard to claims 4, 17, 29, 43, 49, and 59, Glenn discloses that the cover unit encloses the first side of the die and at least a portion of the perimeter of the die, the cover unit being configured to seal the first side of the die and at least a portion of the perimeter of the die.

In regard to claims 5, 18, 30, and 50, Glenn discloses that the cover unit encloses at least a portion of the first side of the die and the perimeter of the die; and the imaging unit further having an encapsulant (1430) disposed on the second side of the die.

In regard to claims 8 and 33, Glenn in view of Segawa discloses a microelectric imaging unit as set forth above. Glenn in view of Segawa fails to disclose the optics unit being integral with the window and the side member. However, integrating separate parts is of routine skill in the art. *In re Larson*, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965). It would have been obvious to one of ordinary skill in the art at the time

the invention was made to integrate the optics unit with the window and side member in order to simplify the manufacturing process.

In regard to claims 9, 11, 13, 24, 34, 36, 38, and 55, Glenn discloses (fig. 14) that the individual interconnects have a first end portion and a second end portion spaced apart from the first end portion; corresponding terminals are coupled to the first end portions of each interconnect; the interconnects extend through the cover unit; and the imaging unit further has a plurality of ball-pads (1214a) connected to the interconnects. Glenn does not disclose the ball-pads being on the opposite side of the cover unit. However Glenn discloses in figure 12 the ball-pads being on the second side of the cover unit and coupled to corresponding second end portions of the interconnects (column 18, lines 25-33). It would have been obvious to one of ordinary skill in the art at the time the invention was made to configure the unit as taught by Glenn in figure 12 in order to make the unit more compact.

In regard to claims 14, 25, and 39, Glenn discloses the cover unit includes materials transmissive to a desired radiation (column 5,lines 57-60).

In regard to claim 53, Glenn discloses the cover unit being unitary.

Claims 3, 6, 28, 31, 42, 48, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glenn et al. (6503780) in view of Segawa et al. (2002/0057468) as applied to claims 1, 26, 40, and 46, and in further view of Glenn et al. (6734419) hereinafter referenced as Glenn '419.

In regard to claims 3, 6, 28, 31, 42, 48, and 51, Glenn in view of Segawa discloses a microelectric imaging unit with an encapsulant disposed on the second side of the die as set forth above. Glenn in view of Segawa fails to disclose the cover unit only enclosing the first side of the die. However, Glenn '419 discloses (fig. 2b) a microelectronic imaging unit with a cover (101) that only covers or encloses the first side of the die (111). It would have been obvious to one of ordinary skill in the art at the time the invention was made to only cover the first side of the die in order to most effectively reduce the size of the unit.

Claims 10, 12, 21-23, 35, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glenn et al. (6503780) in view of Segawa et al. (2002/0057468) as applied to claims 1, 15, 26, 40, 46, and 57, and in further view of Choi (5753857).

In regard to claims 10, 12, 21-23, 35, and 37, Glenn in view of Segawa discloses a microelectric imaging unit as set forth above. Glenn in view of Segawa fails to disclose the interconnects going through the die and ball-pads place on the second side of the die. However, Choi discloses (fig. 2) a microelectric imaging unit with a die (17) and interconnects (17b) extending through the die connected to ball-pads on the second side of the die (column 2, lines 35-38). It would have been obvious to one of ordinary skill in the art at the time the invention was made to extend the interconnects through the die to the ball-pads in order to make the unit more compact.

Response to Arguments

Applicant's arguments with respect to claims 1-6, 8-18, 21-31, 33-43, 46-51, 53, 55, and 57-59 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Livedalen whose telephone number is (571) 272-2715. The examiner can normally be reached on 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (571) 272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

bjl

Georgia Epps
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